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**BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES**

Paper No. 32

Application Number: 08/327,744
Filing Date: October 24, 1994
Appellant(s): STONE ET AL.

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Susan C. Oygard
For Appellant

EXAMINER'S ANSWER

This is in response to appellant's brief on appeal filed January 25, 2001.

(1) *Real Party in Interest*

A statement identifying the real party in interest is contained in the brief.

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(2) *Related Appeals and Interferences*

A statement identifying the related appeals and interferences which will directly affect or be directly affected by or have a bearing on the decision in the pending appeal is contained in the brief.

(3) *Status of Claims*

The statement of the status of the claims contained in the brief is correct.

(4) *Status of Amendments After Final*

The appellant's statement of the status of amendments after final rejection contained in the brief is correct.

(5) *Summary of Invention*

The summary of invention contained in the brief is correct.

(6) *Issues*

The appellant's statement of the issues in the brief is substantially correct. However, Issue 2 is not an appealable subject matter but rather one that should have been petitioned. Nevertheless, the Examiner will comment on the same *infra*.

(7) *Grouping of Claims*

Appellant's brief includes a statement that claims 1-8 stand or fall together.

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(8) Claims Appealed

The copy of the appealed claims contained in the Appendix (Exhibit C) to the brief is correct.

(9) Prior Art of Record

5,167,721	McCOMAS et al	12-1992
4,443,845	SHIEMBOB	02-1984
4,409,054	RYAN	10-1983
4,218,066	ACKERMANN	08-1980

(10) Grounds of Rejection

The following ground(s) of rejection are applicable to the appealed claims:

Claims 1-8 stand rejected under 35 U.S.C. 103(a) as being unpatentable over McComas et al in view of Shiembob, Ryan, or Ackermann.

McComas et al discloses the invention substantially as claimed including the inherent step of having the liquid stream striking the substrate at the base of the coating 1 (analogous to the claimed honeycomb) due to, *inter alia*, the relative motion between the component and the liquid stream 5 and the fact that McComas et al removes both the coating and the bond coating 2 (analogous to the claimed braze) *simultaneously*. See Figs. 1-1A, c. 1, l. 19 - c. 3, l. 66. Although McComas et al lacks a honeycomb as the form of the coating, McComas does teach that the method encompasses removal of *abratable seals* which are used in gas turbine engines. See *Id.*, c. 1, ll. 19-25. Regarding the honeycomb, Shiembob, Ryan, and Ackermann all teach that a honeycomb, braze,

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and substrate is a well known abradable seal in the art for gas turbine engines. More specifically, Shiembob teaches an insulated honeycomb seal for gas turbine engines comprising a honeycomb 2 that is inherently brazed onto a substrate 18. See whole patent. Ryan teaches another abradable seal for gas turbine engines comprising a honeycomb 2 brazed onto a substrate 1. See whole patent. Ackermann teaches a further example of an abradable seal comprising a honeycomb 28 which is inherently brazed onto a substrate (not designated by reference but see Fig. 1). See whole patent. Thus, it would have been obvious to the ordinary artisan at the time of the instant invention to provide the method of McComas et al with the honeycomb as taught by either Shiembob, Ryan, or Ackermann in order to facilitate the removal of the same from the substrate during maintenance, since as noted above, the honeycomb is another form of an abradable seal that is a "coating" for which McComas et al method is to be applied.

Claims 1-8 stand rejected under 35 U.S.C. 103(a) as being unpatentable over Shiembob, Ryan, or Ackermann in view of McComas et al.

Shiembob, Ryan, or Ackermann all disclose various forms of abradable seals for gas turbine engine comprising a honeycomb, braze, and substrate structure. See *Id.* However, none of these references teach the method of removal of the honeycomb and braze from the substrate. In that regard, McComas et al teaches that it is common practice in the art to perform routine engine maintenance which frequently requires removal of coatings in the abradable seals. See *Id.*, c. 1, ll. 60-67. McComas et al specifically teaches a method of removing a coating 1 and bond coating 2 that is an abradable seal from a substrate comprising all the method steps claimed, i.e. flow,

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pressure, and angle of the liquid stream 5, including the inherent step of having the liquid stream striking the substrate at the base of the coating, since, *inter alia*, this striking position is the obvious position that facilitates simultaneous removal of the coating and bond coating from the substrate, this method facilitating easy removal without damaging the substrate. Thus, it would have been obvious to the ordinary artisan at the time of the instant invention to apply the liquid removal method of McComas et al to the abradable honeycomb seals of either Shiembob, Ryan, or Ackermann in order to facilitate easy removal of the honeycomb and braze without damaging the substrate whenever maintenance requires the same, since as taught by McComas et al abradable seals is just another form of coating that is subject to removal of the same during maintenance.

(11) Response to Argument

RE: Appellant's Argument that the Examiner Erred in Omitting to Acknowledge or Comment Upon the Inventor's Declaration Filed November 15, 2000.

In response to Appellant's basic argument that the Examiner erred in not responding to the declaration filed on November 15, 2000,¹ the Examiner concedes that the Examiner erred in not responding at that time. However, the Examiner attempted to resolve this issue in the Notice of Non-Compliance With 37 CFR 1.192(c) mailed on April 10, 2001.² The Examiner sent this communication to reduce the issues on appeal,

¹ See Appeal Brief, Paper No. 30, p. 4, l. 11 - p. 5, l. 30.

² See the Notice of Non-Compliance With 37 CFR 1.192(c), Paper No. 31.

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i.e. to reduce this particular issue on appeal, and to allow the Appellant to respond to the Examiner's position in any way the Appellant deems appropriate. In response thereto, the Appellant noted in the communication filed on May 29, 2001³ that there is no technical defect with the Brief *per se*, and that no further submission is necessary by the Appellant for consideration by the Board. Therefore, this appeal has been forwarded with the Brief as previously filed on January 25, 2001, and the following Examiner's response to the Declaration filed under 37 CFR 1.132 is presented as rebuttal.⁴

The declaration under 37 CFR 1.132 filed on November 16, 2000 is insufficient to overcome the rejection of claims 1-8 based upon McComas in view of Shiembob, Ryan, or Ackerman as set forth in the last Office action because: the showing is not commensurate in scope with the claims.

First, it is noted that Mr. Clifford V. Mitchell (declarant), is one of the named inventors of the instant application. Due to this fact, these statements are less persuasive than that of a disinterested person, but the weight thereof will not be disregarded for this reason alone. *Ex parte Keyes*, 214 USPQ 579 (Bd. App. 1982); *In re McKenna*, 203 F.2d 717, 97 USPQ 348 (CCPA 1953). It is also noted that although factual evidence is preferable to opinion testimony, such testimony is entitled to consideration and some weight so long as the opinion is not on the ultimate legal conclusion at issue. While an opinion as to a legal conclusion is not entitled to any weight, the underlying basis for the opinion may be persuasive. *In re Chilowsky*, 306 F.2d 908, 134 USPQ 515 (CCPA 1962); *In re Lindell*, 385 F.2d 453, 155 USPQ 521 (CCPA 1967). Therefore, the probative value of declarant's statements are limited to the underlying basis for the opinion.

Second, declarant asserts that a honeycomb metal structure is different from spray and sintered coatings as in McComas, and the declarant further asserts that the methods employed to remove this coating is different from that of the metal honeycomb.⁵ However, this is not germane to the claims at bar. The claims do not require the honeycomb structure to be metal. Thus, it is irrelevant. Moreover, the claims were not rejected under McComas alone but also under a plurality of different references which individually combined with McComas rendered the claimed invention obvious. In

³ See Communication filed on May 29, 2001.

⁴ See the Declaration, Paper No. 26 and the Examiner's Response in Paper No. 31.

⁵ Declaration, ¶ 2.

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addition, the Examiner also pointed out in the rejection of the claims that McComas teaches a liquid jet erosion method which encompasses removal of abradable seals used in gas turbine engines. The declarant did not touch on this point. Therefore, declarant's comments that the removal methods for the spray and sintered coatings are not generally applicable to metal honeycomb fails to persuade.

Third, the declarant discusses to some extent the process the declarant was involved in obtaining the present method to overcome a long felt need.⁶ However, they include statements which amount to an affirmation that the claimed subject matter functions as it was intended to function. This is not relevant to the issue of nonobviousness of the claimed subject matter and provides no objective evidence thereof. See MPEP § 716. In addition, the declarant fails to establish that the long-felt need have not been satisfied by another before the invention by the Applicant. *Newell Companies v. Kenney Mfg. Co.*, 864 F.2d 757, 768, 9 USPQ2d 1417, 1426 (Fed. Cir. 1988). The declarant identifies the long-felt need as basically a honeycomb removal process that does not damage the substrate. In that regard, McComas already teaches a method that perform substantially the same except that it is in reference to the coating on the substrate. However, as the Examiner noted above, McComas also teaches that the method may be applied on abradable seals in turbine engines. The claimed honeycomb is an abradable seal. Therefore, McComas provides sufficient evidence that the long-felt need had been satisfied prior to the Applicant. Lastly, the alleged failure to solve the long-felt need may be due to factors such as lack of interest or marketability rather than want of technical know-how. *Scully Signal Co. v. Electronics Corp. of America*, 570 F.2d 355, 196 USPQ 657 (1st Cir. 1977).

In view of the foregoing, when all of the evidence is considered, the totality of the rebuttal evidence of nonobviousness fails to outweigh the evidence of obviousness.

In addition, the Examiner presents the following to emphasize the points made in the response.

In ¶ 2 of the declaration, the declarant states that "honeycomb is a formed metal structure braze bonded to a metal substrate" and further describes the difference between "honeycomb" and the "plasma sprayed and sintered coatings" described in

⁶ *Id.*, ¶¶ 3-6.

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McComas et al. However, this point is irrelevant when the claims on appeal do not include this limitation. For example, claim 1 on appeal, the only independent claim, sets forth a “method for removing honeycomb and braze from a substrate”.⁷ There is nothing in this claim nor in any of the dependent claims that sets forth a “metal” honeycomb or a honeycomb that is a “formed metal structure”. Thus, this feature is not germane for consideration on the merits. Even if the Examiner should consider that the claimed “honeycomb” must be metal, then the combined teachings of the applied references renders this feature as obvious. As noted *supra*, McComas et al teaches that the liquid jet removal method in McComas et al is applicable on abradable seals used in gas turbine engines. Shiembob, Ryan, and Ackermann all teach various forms of abradable seals comprising, *inter alia*, a honeycomb structure. Moreover, Ryan, e.g., teaches that the honeycomb structure is made of metal.⁸ Therefore, since McComas et al teaches the liquid jet method for removing seals, coatings, or portions thereof and since Shiembob, Ryan, and Ackermann teach various honeycomb structured abradable seals with the honeycomb made of metal, this feature is obvious and non-distinguishing.

In ¶ 3 of the declaration, the declarant states that “prior to the introduction of high pressure liquid processes, sprayed and sintered coating were typically removed either by a chemical strip or grit blasting; honeycomb was typically removed by grinding and/or a chisel.” However, the teachings of the prior art refutes this. McComas et al clearly teaches using a high pressure liquid jet process to remove sprayed and sintered coatings as well as seals of which honeycomb structured seals are included as evidenced

⁷ Note Exhibit C, claim 1, l. 1.

⁸ See Ryan, c. 3, ll. 3-5.

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by the teachings of Shiembob, Ryan, and Ackermann, i.e. honeycomb structured seals falls squarely in the bounds of “abradable seals”.

In ¶¶ 4-5 of the declaration, the declarant states the time and extent of experimentation involved in obtaining the invention. However, the declarant fails to set forth the parameters in which these “experiments” were conducted, and the declarant fails to set forth the processes involved in these “experiments”. For example, how was the experimentation conducted? What range of jet fluid pressures were used? What kind of fluids were used, e.g. one with abrasion materials mixed in or one without? What types of nozzles were used? Moreover, how is this assertion relevant to the claims on appeal? None of the statements set forth any evidence that such experimentation is unusual or non-routine to one skilled in the art, especially when McComas et al clearly teaches using high pressure jet fluid to remove abradable seals. In sum, the declarant’s statements are conclusory without any factual evidence in support thereof.

In ¶ 6 of the declaration, the declarant states that “repair customers have expressed a long felt need for a honeycomb removal process that does not damage the substrate” and further states that “present machining techniques to remove honeycomb result in an unacceptably high scrap rate”. However, as noted *supra*, the declarant fails to set forth any factual evidence in support of this asserted long-felt need. In fact these statements basically reassert that the claimed invention works as intended. More importantly, the declarant fails to establish that this long-felt need had not been satisfied by another before the invention by the Appellant. As explained above, McComas et al’s teachings provide a *prima facie* case of having satisfied this long-felt need by the high pressure jet fluid process of removing abradable seals without harming

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the substrate. Note the abstract in McComas et al. Moreover, it is not clear what is encompassed by the “machining techniques”. What are these “techniques”, and how is this relevant to the teachings of the prior art? McComas et al clearly teaches the use of high pressure jet fluid. Thus, how are these “machining techniques” relevant to the teachings of McComas et al if the declarant is asserting that the “machining techniques” are any other processes that do not use high pressure fluid? In sum, there is no distinction.

RE: Appellant’s Argument that the Examiner Erred in Concluding that the Phrase “metal honeycomb” Was Not Earlier Presented and Lacks Support in the Specification.

In response to Appellant’s basic argument that the Examiner erred in refusing to enter the proposed After Final Amendment filed on November 16, 2000,⁹ this argument fails to persuade for the following reasons.

First, it is noted that this issue is not an appealable subject matter but rather one that should have been petitioned. However, to make the Examiner’s Answer complete, the Examiner will address this issue *infra*.

Second, the Appellant is reminded that it is not a matter of right to have any amendments after final entered. 37 CFR 1.116. Moreover, the Appellant’s submission failed to comply with 37 CFR 1.116.

Third, the Appellant’s arguments are couched in the assertion that the disclosure supports the description of the honeycomb as “metal”. Upon review of the specification,

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it appears that the Appellant is correct. Therefore, the Examiner concedes only to the extent that the “metal honeycomb” is not new matter. However, this concession does not provide sufficient basis to enter the Appellant’s after final amendment.

Fourth, the most important issue to consider here lies in the fact that the Appellant’s after final amendment raised new issues. The term “metal honeycomb” changed the scope of the claims under final. Prior to the introduction of the term “metal”, no consideration for the particular material composition of the honeycomb was necessary in determining patentability of the claims as evidenced by the protracted prosecution history of the instant application in which the claims were little changed and there was no emphasis placed upon the material of the honeycomb.¹⁰ Due to this fact, there is no convincing showing why the proposed amendment is necessary and was not earlier presented. Moreover, as the Appellant points out in p. 6, ll. 24-30 of the Brief, the Appellant’s assertion that the amendment attempted to clarify that honeycomb is different from the coating materials discussed in McComas et al clearly supports the Examiner’s position that this introduction raised new issues. For this reason alone, the Examiner did NOT err in refusing entry of the after final amendment.

In sum, while the Examiner may have erred in asserting that the after final amendment introduced new matter, the Examiner did NOT err in determining that the after final amendment raised new issues, and Appellant’s emphasis on the former is misdirected.

⁹ Appeal Brief, p. 6.

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RE: Appellant's Assertions that the Present Invention is Not *Prima Facie* Obvious Over the Combination of McComas et al and Either Shiembob, Ryan, or Ackermann.

Initially, it is noted that the Appellant's explanation of what McComas et al discloses¹¹ is not completely on point. While it is correct that McComas et al discloses a method for removal of coating materials *per se*, McComas et al also teaches that abradable seals are one of the types of coatings encompassed by the teachings of McComas et al.

Various types coatings and sintered materials are used in numerous applications, such as in gas turbine engines to increase efficiency and/or protect components from heat and wear. Types of materials include thermal barrier coatings, abrasive coatings, *abradable seals*, and hard facing: *hereinafter referred to as coatings*.¹² (Emphasis added.)

Re: 1. Appellant's contention that there is no suggestion of motivation in the reference or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or combine the reference teachings.

In response to Appellant's basic argument that there is no suggestion to combine the references,¹³ the Examiner recognizes that obviousness can only be established by combining or modifying the teachings of the prior art to produce the claimed invention where there is some teaching, suggestion, or motivation to do so found either in the references themselves or in the knowledge generally available to one of ordinary skill in the art. See *In re Fine*, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988) and *In re Jones*,

¹⁰ Note Amendment A, Paper No. 6, p. 2 which is the only instance in which the claims were amended in any substantive manner.

¹¹ Appeal Brief, p. 7, ll. 15-20.

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958 F.2d 347, 21 USPQ2d 1941 (Fed. Cir. 1992). However, there is no requirement that a motivation to make the modification be expressly articulated. The test for combining references is what the combination of the disclosures taken as a whole would suggest to one of ordinary skill in the art. *In re McLaughlin*, 170 USPQ 209 (CCPA 1971).

References are evaluated by what they suggest to one versed in the art, rather than by their specific disclosures. *In re Bozek*, 163 USPQ 545 (CCPA 1969). In this case, the suggestion to combine stem from all the references and the knowledge of the ordinary artisan. McComas et al teaches removal of an unwanted layer of material from a substrate by using high pressure liquid with the implicit teaching that the liquid stream strikes the base of the layer. In McComas et al, the layer is a coating that is used in gas turbine engines. Types of material for the coating include thermal barrier coatings, abrasive coatings, *abradable seals*, and hard facing.¹⁴ Notably, this is the same type of work for which Appellant's invention is intended, i.e. the honeycomb structure for Appellant's invention is commonly used to form *abradable seals* such as between jet engine components including stators and blades.¹⁵ Moreover, both McComas et al and the Appellant's invention are directed to the same problem, i.e. both concern removal of the layer in an efficient and convenient manner without damaging the substrate during gas turbine engine maintenance or reworking.¹⁶ Thus, McComas et al provides a *prima facie* case of obviousness of the claimed invention. Although McComas et al does not explicitly teach removal of a honeycomb structure *per se*, Shiembob, Ryan, and

¹² McComas et al, c. 1, ll. 19-24.

¹³ Appeal Brief, p. 8, l. 19 - p. 9, l. 27.

¹⁴ See McComas et al, c. 1, ll. 19-33.

¹⁵ See Application Specification, p. 1, ll. 8-17.

¹⁶ Compare Application, p. 1, ll. 8-28 and McComas et al, c. 1, l. 19 - c. 2, l. 30.

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Ackermann all teach various forms of abradable seals in the form of a honeycomb structured seal.¹⁷ Since McComas et al teaches that it is typical in the art to periodically remove the abradable seal, i.e. the “coating” as taught by McComas et al (see footnote 12), from the substrate during engine maintenance and since Shiembob, Ryan, and Ackermann all teach abradable seals in the form of honeycomb seals, it would have been obvious to the ordinary artisan to apply the liquid jet removal method of McComas et al to the honeycomb seals of either Shiembob, Ryan, and Ackermann as set forth in the rejection *supra*.

Regarding Appellant’s assertion that the Examiner acknowledges that McComas et al does not teach that the claimed method can be used with honeycomb,¹⁸ this assertion is not well taken and not clearly understood. How does McComas et al not teach that the claimed method can be used with honeycomb? The only point that the Examiner acknowledged in the rejection is that McComas et al does not explicitly set forth honeycomb seals as the form of the coating or abradable seal. This lacking teaching is rendered obvious by the other references as noted above. Nothing in the

¹⁷ See e.g., Shiembob - “This invention relates to *honeycomb type of seals for gas turbine engines*” (emphasis added, c. 1, ll. 6-7), “Where the seal is a honeycombed material the honeycomb has been filled with a paste form of insulation which is then *brazed* or sintered to set and *bond* the material” (emphasis added, c. 1, ll. 16-19), “Desirably the seals have a minimum of clearance...the *honeycomb material is selected as a seal* since it will *wear away* readily in the event of contact with the blade shrouds...” (emphasis added, c. 2, ll. 3-9); Ryan - “It is known in the art to use an *abradable material* in a rotating machinery application to form a good seal between a moving and a stationary part...Abradable materials are often located and restrained by being placed in a supporting *honeycomb structure*” (emphasis added, c. 1, ll. 12-23), “An object of this invention is to provide a pliable tape preform consisting of at least one region which contains an substantial amount of a *brazed material* and a second region which is composed primarily of an *abradable material*” (emphasis added, c. 1, ll. 59-63), “The present invention relates to *honeycomb structures* which are at least partially filled with an *abradable tape*” (emphasis added, c. 2, ll. 21-23); Ackermann - “One of the channel forming members is fabricated from a *honeycomb type material*...” (emphasis added, c. 2, ll. 17-18), “The *honeycomb structure* has a very low density and is *abradable* during operation of the machine” (emphasis added, c. 3, ll. 45-46).

¹⁸ Appeal Brief, p. 8, ll. 27-28.

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rejection states that McComas et al teaches that McComas et al's method cannot be used with honeycomb. What misunderstanding does the Appellant have with respect to the Examiner's statement that "McComas lacks a honeycomb *as the form of the coating*"? The Examiner may be making much out of something small here; however, any misrepresentation of the Examiner's statements in the Office Actions will not be tolerated.

In response to Appellant's basic argument that there is no suggestion to apply the McComas et al method to honeycomb merely because of lack of any reference to honeycomb in McComas et al,¹⁹ this argument lacks merit. This argument basically amounts to a traversal on the teachings of a single reference. As such, the Appellant is reminded that one cannot show nonobviousness by attacking references individually where the rejections are based on combinations of references. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981); *In re Merck & Co.*, 800 F.2d 1091, 231 USPQ 375 (Fed. Cir. 1986). It is emphasized that despite the lack of a specific reference in McComas et al to honeycomb, McComas et al clearly provides a *prima facie* case of obviousness to apply the method on various types of coatings of which abradable seals are one, and the other applied references clearly teach specific honeycomb which are abradable seals. Moreover, the lack of any explicit reference in McComas et al to honeycomb is not, standing alone, sufficient evidence that McComas et al fails to teach or suggest applying McComas et al's method to honeycomb. As noted above, there is no requirement that a motivation to make the modification be expressly articulated, i.e. within the reference. The test for combining references is what the combination of the

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disclosures taken as a whole would suggest to one of ordinary skill in the art. Even the citation at p. 9, ll. 21-27 in the Brief support the Examiner's position. Every point that the Appellant has made is couched in the assertion that McComas et al does not expressly set forth honeycomb. However, the citation teaches that in determining obviousness "*either* the references must expressly *or impliedly* suggest the claimed invention" (emphasis added). As the Examiner notes *supra*, McComas et al at the very least implies applicability of McComas et al's method to honeycomb. Regarding Appellant's allegation as to what McComas et al is directed to,²⁰ this allegation lacks merit. Appellant's allegation urges the Examiner and the Board to disregard wholesale the overall teachings of McComas et al. McComas et al is not just limited to "removal of coating materials" or "sprayed and sintered coatings" as the Appellant asserts. As noted *supra*, McComas et al's teachings apply to coatings that include abradable seals. Moreover, Appellant's assertion that there is simply no teaching in McComas et al to apply the disclosed method to honeycomb or any other type of material except for "sprayed and sintered coatings whose cohesive strength is significantly less than that of the substrate"²¹ is a misrepresentation of facts. C. 2, ll. 42-44 of McComas et al clearly teaches that the McComas et al invention process "*can be used* to remove plasma sprayed and sintered coatings..." (emphasis added). "Can be" is not the same as "must" as the Appellant would have everyone believe. More importantly, c. 2, ll. 33-41 in McComas et al teaches the more broader aspect of McComas et al's invention, i.e. the

¹⁹ *Id.*, p. 9, ll. 1-11.

²⁰ *Id.*, p. 9, ll. 6-15.

²¹ *Id.*, p. 9, ll. 12-15.

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liquid jet erosion process comprising, *inter alia*, eroding the abradable seal/thermal barrier without substrate damage.

In response to Appellant's basic argument that there is no suggestion in either Shiembob, Ryan, or Ackermann relevant to honeycomb removal,²² this argument lacks merit. Again the Appellant is attacking references individually whereas here, the claimed invention has been rejected under a combination of references. Thus, the Examiner's response *supra* with respect to the Appellant's piecemeal analysis of the references applies equally here. Contrary to the Appellant's assertion that the Examiner indirectly makes Appellant's point by citing out of context the Examiner's statement regarding the fact that neither Shiembob, Ryan, nor Ackermann teach the method of removal of the honeycomb, this method is rendered obvious by the combined teachings of McComas et al. That statement by the Examiner was applied in a different obviousness rejection wherein the claims were rejected by Shiembob, Ryan, or Ackermann *in view of McComas et al.* Therefore, it is not germane to the present line of arguments which are directed toward the rejection of the claims by McComas et al *in view of Shiembob, Ryan, or Ackermann.* Moreover, to fully respond to what the Examiner best understands of the Appellant's argument, i.e. the references do not teach removal and therefore there is not suggestion to remove the same, McComas et al clearly teaches that it is old and well known in the art to remove the coatings (inclusive of abradable/honeycomb seals) during routine maintenance of turbine engines.²³ Even the Appellant's disclosure teaches that it is common knowledge in the art to remove

²² *Id.*, p. 9, ll. 15-20.

²³ McComas et al, c. 1, l. 60 - c. 2, l. 30.

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honeycomb. In p. 1, ll. 8-26 of the instant application, the disclosure teaches that conventionally, i.e. admitted prior art, the honeycomb as exemplified by the commercially available HASTELLOY™-X, Shiembob (US 4,433,845), Ryan (US 4,409,054), and Ackerman (US 4,218,066) are subject to honeycomb removal via machining and grinding techniques, chemical immersion, and de-brazing with heat. Thus, contrary to Appellant's assertions, even though Shiembob, Ryan, or Ackermann do not expressly teach removal of the honeycomb seal, McComas et al and the Appellant's admitted prior art clearly teaches that it is known to the ordinarily skilled artisans in the art of gas turbine engines that the honeycomb seals of Shiembob, Ryan, and Ackermann are subject to periodic removal of the same due to wear.

Lastly, in response to the Appellant's allegation that those skilled in the art at United Technologies Corporation (hereinafter referred to as UTC) would not have concluded the obviousness of the claimed invention, this allegation is baseless. These UTC artisans are not germane to the rejection at bar. Nothing in the statutes requires the Examiner to consider a subset of ordinarily or exceptionally skilled artisans involved with a specific corporation. Where is it written in 35 USC § 103 that require such a consideration? Moreover, where's the proof in support of the Appellant's allegation? What affidavits or declarations from these UTC artisans has the Appellant proffered? None has been provided. Therefore, this allegation carries no weight. Regarding these UTC artisans, it is noted that all the applied references are assigned to UTC. Moreover, a review of the Assignment report for this application on appeal reveals that the instant

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application is also assigned to UTC.²⁴ Thus, how can it be said that the Appellant's allegation is objective and comparable to those of a disinterested party? As noted above with respect to the Examiner's response to the declaration, any opinion from an interested party as to the ultimate legal conclusion is given no weight. This response applies to all instances in the Brief where the Appellant alleges that UTC artisans would not conclude the obviousness of the claimed invention.

Re: 2. Appellant's contention that there was no reasonable expectation of success.

In response to Appellant's basic argument that there was no reasonable expectation of success for the combination as proposed by the Examiner,²⁵ this argument lacks merit. This argument is couched in the statements made in the declaration of the inventor. Therefore, the Examiner's response *supra* with respect to the declaration applies here. Moreover, contrary to the Appellant's assertions, there is a high degree of expectation of success based upon the combined teachings of the references. McComas et al teaches and provides the *prima facie* case of obviousness to utilize the liquid jet erosion process on coatings including abradable seals/thermal barriers.²⁶ Since the honeycomb seals in Shiembob, Ryan, and Ackermann are forms of abradable seals and since McComas et al teaches removal of the same especially during routine engine maintenance, the combined teachings provide more than enough evidence and expectation that liquid jet erosion would work on honeycomb seals. Moreover, as noted in the response to the declaration, the honeycomb being "metal" is

²⁴ See PALM Assignment Serial Number Information for 08/327,744, Reel/Frame #007216/0984.

²⁵ Appeal Brief, p. 10, ll. 1-19.

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not germane to the claims on appeal. The amendment to that effect was not entered, and therefore, it has not been considered.

Regarding Appellant's statement that honeycomb has different erosion characteristics from the sprayed and sintered coatings discussed in McComas et al, this statement is baseless. Throughout the Brief the Appellant has been urging everyone to read McComas et al's teachings as being limited to only sprayed and sintered coatings. As discussed numerous times *supra*, this is simply not the case. McComas et al's teachings apply to various different coatings including abradable seals. The sprayed and sintered coatings discussed in McComas et al are only one example of material to which the liquid jet erosion process may be applied. Moreover, even considering the different erosion characteristics, this is not a distinguishing point when the ordinarily skilled artisan would have the knowledge to adjust the pressure of the liquid jet stream to compensate for the difference.

Regarding Appellant's assertion that the declarant's statements were unchallenged, this assertion is baseless. Contrary to Appellant's assertions, those statements were thoroughly challenged in the Notification of Non-Compliance With 37 CFR 1.192(c) and *supra*. It is noted that this assertion is precisely the reason why the Examiner sent the above mentioned Notification. The Notification gave the Appellant a chance to either delete such statements or amend the Appellant's position in response to the Examiner's position on this issue. The opportunity was not taken.

In sum, there is a high degree of success for the combination in rendering the Appellant's invention obvious. The distinction between materials is rendered obvious

²⁶ McComas et al, *Id.*

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by the combined teachings of the references and the knowledge and skill of the ordinary artisan.

Re: 3. Appellant's contention that the prior art references do not teach or suggest all of the claim limitations.

In response to the Appellant's basic argument that the references do not teach or suggest all of the claim limitations,²⁷ this argument lacks merit.

First, Appellant asserts that McComas et al teaches away from the invention as defined in the appealed claim 1 because the liquid stream 5 in McComas impinges on the *topmost exposed surface* of the coating as opposed to striking *the substrate* at the base of the honeycomb. This argument misses the mark when Appellant's assertions fail to consider the teachings of McComas as a whole as well as the knowledge and skill of the ordinary artisan. For example, the basic teachings of McComas is in using a liquid jet stream 5 to remove the coating 1 (analogous to the claimed honeycomb), bond coat 2 (analogous to the claimed braze), or *both* simultaneously from a substrate, this method being advantageous over the prior art methods (examples given in the BACKGROUND ART section of the patent) since it insures essentially no damage to the substrate.²⁸ Notably, this is the same objective as Appellant's invention.²⁹ Moreover, the basic example of the BEST MODE FOR CARRYING OUT THE INVENTION³⁰ clearly teaches that McComas et al's teachings are not limited to merely impinging on the topmost

²⁷ Appeal Brief, p. 10, l. 20 - p. 12, l. 12.

²⁸ McComas et al, Figs. 1-1A, c. 1, l. 17 - c. 2, l. 47.

²⁹ See Appeal Brief, p. 3, ll. 17-26 and Application Specification, p. 1, l. 7 - p. 2, 7.

³⁰ McComas et al, c. 2, l. 55 - c. 3, l. 66.

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surface to erode away the coating material. McComas et al also teaches relative movement between the component 10 and the liquid jet stream 5 such that the angle between the component and the stream decreases from the starting angle.³¹ McComas et al does not set forth a specific axis in which the component should rotate which implies that it is left to the skill of the ordinary artisan to determine the rotation axis such that it will ensure that the removed fragments will not interfere with the process. This movement encompasses a position of the stream where the stream strikes the substrate at the base of the coating material. Furthermore, it is well known to one skilled in the art or to one of ordinary skill art that the teachings of McComas includes having the stream striking the substrate at the base of the coating. One, any artisan using a liquid stream, whether the stream be of liquid jet pressure magnitude or an ordinary garden hose pressure magnitude, to remove a layer of unwanted material from a substrate would direct the stream at the base or interface between the substrate and the unwanted layer. Even McComas et al recognizes or suggests this from the recitation of cleaning applications for relatively low pressure liquid jets.³² Two, McComas clearly teaches that the invention can “remove both the abradable seal/thermal barrier [coating - analogous to the claimed honeycomb] *and* bond coat [analogous to the claimed braze] *simultaneously* without substrate damage” (insertions and emphasis added).³³ If McComas et al’s teachings are limited to only impinging the topmost layer to erode the same and expose the bond coat or the substrate as Appellant asserts, then how is it

³¹ *Id.*, c. 3, ll. 6-28.

³² *Id.*, c. 2, ll. 21-28. Note the barnacle and hull fouling removal example in this citation. In this situation, the mere impingement of the stream on the surface of the barnacle will not remove the same from the hull. The stream must be directed at an angle such that the stream will strike the base of the barnacle to erode the adhesion between the hull and the barnacle to facilitate removal thereof.

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possible for McComas et al to perform a *simultaneous* coating and bond removal process? This simultaneous removal cannot occur if the stream has to go through the top layer first. However, simultaneous removal would occur *after* the stream has eroded through the top layer to reach the base of the coating, i.e. bond layer, and the stream maintained at the bond layer to simultaneously remove both in subsequent relative movement between the stream and the component. In either case, the stream must strike the bond coating, i.e. *base* of the coating, to simultaneously remove the coating and the bond. Lastly, Appellant construes the appealed claim 1 and McComas et al's teachings rather narrowly. While it is acknowledged that Fig. 1 of McComas shows an example of coating removal supporting Appellant's contentions, it is still only an example. Nothing in McComas et al limits the teachings therein to only that example as noted above. Moreover, nothing in the appealed claim 1 distinguishes from the inherent teachings of McComas et al. Appealed claim 1 merely calls for the stream to "strike the substrate at the base of the honeycomb, thereby removing the honeycomb and braze from the substrate".³⁴ The claim does not limit where or how this occurs, nor does the claim limit the extent or quantity of removal, i.e. even though the claim sets forth the substrate, honeycomb, ribbon, and ribbon direction, the claim does not specify at what point (beginning, middle, end, or any point in-between) of the substrate and honeycomb structure that "striking" must occur, the claim does not specify that the stream must follow the ribbon direction, and the claim does not specify how much of the honeycomb and braze must be removed. In that regard, Fig. 1 of McComas et al shows that the

³³ *Id.*, c. 2, ll. 36-41.

³⁴ See Exhibit C, claim 1, ll. 5-6.

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stream strikes the base of the coating adjacent the groove already formed due to the dispersion characteristics of the stream impacting the substrate which inherently facilitates limited amount of removal of the coating and bond in the adjacent region. This meets the alleged lacking limitation since the claim does not limit partial removal. Furthermore, the teachings of McComas et al suggest a coating and bond removal process which *begins* with an erosion of the topmost layer, but ends with the stream striking the base of the coating (the bond coat) to facilitate *simultaneous* removal of the coating and bond.³⁵ This still meets the claimed limitation since the claim *does not exclude* an intermediate step, i.e. erosion or removal of the topmost layer, prior to stream impingement of the base of the coating to remove the coating and the bond coating. In sum, McComas does not teach away from the claimed invention as Appellant contends since the limitation Appellant relies is implicit in McComas and since the claimed invention is not so limiting as to exclude any intermediate steps that results in removal of both the coating (honeycomb) and the bond coating (brazing).

In response to Appellant's argument that neither Shiembob, Ryan, nor Ackermann make any reference to removing honeycomb or the alleged lacking step, this argument lacks merit. With respect to the former, this point has been fully addressed *supra*. McComas et al in combination with these references provides the teaching for removing honeycomb. With respect to the latter, it is irrelevant whether the references teach the impinging step, since that is not the teachings relied on with respect to these references.

For the above reasons, it is believed that the rejections should be sustained.

³⁵ See e.g. claims 1 and 13 of McComas et al.

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